Natural Heritage & Endangered Species Program
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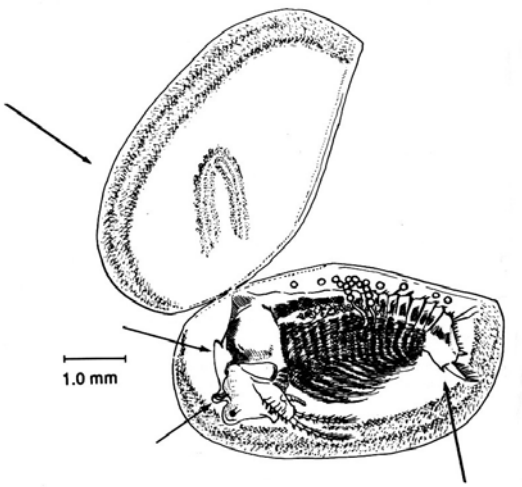
Agassiz's Clam Shrimp

Eulimnadia agassizii

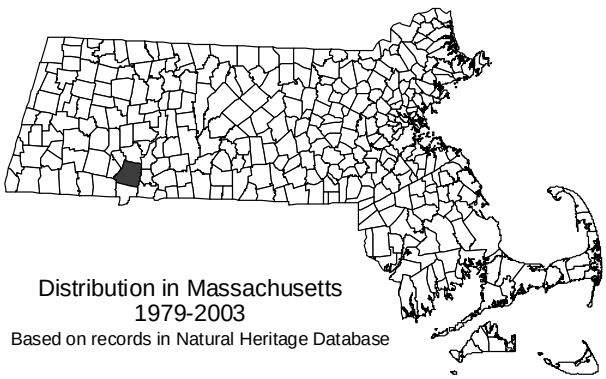
State Status: **Endangered**
Federal Status: None



Thorp, J.H. and Covich, A.P. (Eds.) Ecology and Classification of North American Freshwater Invertebrates. 2nd Edition. Academic Press. 2001.

Description:
Agassiz's Clam Shrimp is a small crustacean that resembles a mollusk at first glance because it is enclosed in a bivalved structure called a carapace. The egg-shaped carapace is transparent, ranging in color from clear to brown. It consists of two shell-like valves that are connected by a fold, each with 4 (occasionally 5) growth lines. The valves enclose the head and eyes, body, and feathery appendages of Agassiz's Clam Shrimp. Like all clam shrimps, this species swims with the fold of its carapace pointing up and its appendages pointing down to aid in locomotion, respiration, and feeding. Specimens of Agassiz's Clam Shrimp can reach up to 9 mm, but examination of specimens from one population reached only ~6.0 mm.

Habitat:
Agassiz's Clam Shrimp has been found in the ephemeral pools of a floodplain depression and in a flooded hay field after the heavy rain of a large storm (Smith 1995). It has also been found in a flooded sand trap and a nearby flooded depression on a golf course (Zinn and Dexter 1962). In 1999, Agassiz's Clam Shrimp was reportedly found in a heavily vegetated drainage ditch that was dominated by butterfly weed (Asclepias tuberosa; J. Kelly, personal communication 2004).



Distribution in Massachusetts
1979-2003
Based on records in Natural Heritage Database

Life History/Behavior:
Agassiz's Clam Shrimp has a short life cycle, reaching sexual maturity in 8 to 9 days. It appears primarily in late spring and early summer during large storms in years of unusually heavy rainfall. Its short life span has evolved to meet the ephemeral circumstances of its habitat. Adults begin to die shortly before the shallow pool dries or they die stranded as the pool dries. Once the pool dries, the resting eggs remain dormant until the appropriate wet conditions resume, allowing the young to hatch. This resting period can last for several years.

Threats:
Ephemeral pools that support the Agassiz's Clam Shrimp are usually dry many months of the year. Development that disrupts these depressions and pools is the most obvious threat to this species. Draining, filling, and contamination from seepage or the leaching of toxic substances into these habitats also represent potential threats.

Range:
Prior to 1977, Agassiz's Clam Shrimp was known from two localities in southeastern Massachusetts (Woods Hole and Gosnold). Newer records come from the towns of Westfield and Bourne. Belk (1989) has suggested that the clam shrimp *E. stoningtonensis* is actually the same species as Agassiz's Clam Shrimp, expanding the range of Agassiz's Clam Shrimp to include Stonington, Connecticut. Smith (2000) suggests that this species is a southern New England endemic, meaning that its range is likely restricted to this region.

Population Status in Massachusetts:
Little is known regarding the status of Agassiz's Clam Shrimp in Massachusetts. It is very rare in eastern North America and is listed under the Massachusetts Endangered Species Act as Endangered. All listed species are protected from killing, collecting, possessing, or sale and from activities that would destroy habitat and thus directly or indirectly cause mortality or disrupt critical behaviors. In addition, listed animals are specifically protected from activities that disrupt nesting, breeding, feeding, or migration. More information on the habitat requirements and distribution of this species would help in its preservation.

Similar Species:
Two other species of clam shrimp in the class Branchiopoda are quite similar to Agassiz's Clam Shrimp. The Holarctic Clam Shrimp (*Lynceus brachyurus*) from the order Laevicaudata is a more commonly encountered clam shrimp. This clam shrimp is light orange in color, without growth lines on its carapace, and with a smaller, more rounded appearance. The Holarctic Clam Shrimp is found in larger, more persistent ephemeral freshwater habitats. A stereomicroscope is needed to differentiate Agassiz's Clam Shrimp from another species in the order Spinicaudata, the American Clam Shrimp (*Limnadia lenticularis*). The American Clam Shrimp is also translucent in color, is less narrow and more rounded, has 7 to 18 growth lines on its carapace, and is larger at an average of 10 mm. The American Clam Shrimp has been found together with Agassiz's Clam Shrimp in late June. Identification guides sufficiently illustrate the differences between these three species (Smith 2000).

References:

Belk, D. 1989. Identification of species in the conchostracan genus *Eulimnadia* by egg shell morphology. Journal of Crustacean Biology 9: 115-125.

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Smith, D. G. 1992. A redescription of types of the clam shrimp *Eulimnadia agassizii* (Spinicaudata: Limnadiidae). Trans. Am. Microsc. Soc. 111 (3): 223-228.

Zinn, D. J. and R. W. Dexter. 1962. Reappearance of *Eulimnadia agassizii* with notes on its biology and life history. Science 137 (3531): 676-677.